

TITLE OF THE INVENTION

**METHOD FOR CONTROLLING FAX DATA TRANSMISSION
ACCORDING TO AN OUTPUTTING WAY OF A RECEIVING PART**

CLAIM OF PRIORITY

This application makes reference to, incorporates the same herein, and claims all benefits accruing under 35 U.S.C. §119 from an application entitled *Method for Controlling Fax Data Transmission According to the Printing Method of Receiver* earlier filed in the Korean Industrial Property Office on 14 July 1999, and there duly assigned Serial No. 99-28465 by that Office.

BACKGROUND OF THE INVENTION

Field of the Invention

This invention relates to a method for controlling transmission of facsimile data. More specifically, the invention relates to a method for transmitting facsimile data from a memory of a transmitting part facsimile to a receiving part facsimile in order or in reversed order according to a facsimile data receiving and outputting way of the receiving part facsimile.

Description of the Related Art

Generally, a facsimile is a machine for exchanging documents. In the facsimile, a scanner for scanning a document, a printer for outputting data in the shape of letters, and a communication

unit for transmitting and/or receiving data to and/or from another part in wide area are integrally formed. Such a facsimile includes a variety of additional functions to meet demands of users. As one of the additional functions, facsimile data is scanned and stored in a memory before being transmitted. The facsimile data scanned and stored in the memory is advance-transmitted from a transmitting part facsimile to a receiving part facsimile in order from the first page regardless of the facsimile (fax) data outputting way of the receiving part facsimile. At this time, the receiving part needs to realign the fax data on every reception of the fax data.

Exemplars of the art, U.S. Patent 5,877,870 for *Image Transmission Control Method for Facsimile Apparatus* issued to Sakai, U.S. Patent 5,515,177 for *Facsimile Data Transmission over a Low Rate Network by One Dimensional Decoding and Two Dimensional Re-encoding* issued to Propach et al., U.S. Patent 4,661,857 for *Facsimile Communication Control Method* issued to Kondo, U.S. Patent 6,040,922 for *Devices and Method for Facsimile and Data Communication* issued to Umeda et al., U.S. Patent 5,907,599 for *Facsimile Communication Method and Facsimile Machine* issued to Sakayama et al. and U.S. Patent 5,796,493 for *Facsimile Machine* issued to Murai et al. disclose the data transmission for a facsimile device.

I have found that conventional art does not properly show an efficient way for the receiving part facsimile to avoid reordering the facsimile data on every reception.

SUMMARY OF THE INVENTION

It is therefore an object of the present invention to provide a method for transmitting fax data

1 stored in the memory of the transmitting part facsimile to the receiving part facsimile according to
2 the fax data outputting way of the receiving part facsimile.

3 It is another object to have a more efficient method of organizing facsimile data for printing
4 on a receiving part facsimile.

5 It is yet another object to have a method supporting a non-standard mode while avoiding the
6 receiving part to realign the fax data on every reception of the fax data.

7 It is another object to have a system that will give a visual feedback to the user on the
8 transmitting part facsimile about the ordering method of the data set by the receiving part facsimile.

9 The above and other objects are provided according to the present invention by providing a
10 method for controlling transmission of fax data as described hereinafter. A document to be
11 transmitted from a transmitting part facsimile to a receiving part facsimile is scanned and stored.
12 When the document is completely scanned, a pre-entered telephone number of the receiving part is
13 dialed. After the receiving part telephone number is dialed, a data outputting way is required and
14 received from the receiving part facsimile, in the case that a call for transmitting document data is
15 fixed between the transmitting part facsimile and the receiving part facsimile. Then the document
16 data stored according to the received data outputting way is transmitted.

17 Preferably, the method for controlling transmission of fax data further includes the step of
18 displaying the data outputting way of the receiving part facsimile received from the receiving part
19 facsimile. The data outputting way applied to the present invention may be one of a face down way
20 in which the stored document data is output in order from the first page of the stored document data;

1 and a face up way in which the stored document data is output in reversed order from the last page
2 of the stored document data.

3 In addition, according to the present invention, both of the transmitting part facsimile and
4 the receiving part facsimile support a non-standard mode and report the data outputting way by
5 fixing a data outputting way mode bit. Moreover, the scanned document data is managed in the unit
6 of pages and stored in the memory.

7 BRIEF DESCRIPTION OF THE DRAWINGS

8 A more complete appreciation of this invention, and many of the attendant advantages
9 thereof, will be readily apparent as the same becomes better understood by reference to the following
10 detailed description when considered in conjunction with the accompanying drawings in which like
11 reference symbols indicate the same or similar components, wherein:

12 FIG. 1 is a perspective view of facsimiles interconnected to perform the present invention;

13 FIG. 2 is a block diagram of a facsimile for performing the present invention;

14 FIG. 3 is a conceptional view of protocols for transmitting and receiving fax data;

15 FIG. 4 is a flowchart of a method for controlling transmission of fax data according to a
16 outputting way of a receiving part; and

17 FIG. 5 is an embodiment of a display in a transmitting part facsimile after the outputting way
18 of the receiving part is detected according to the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Turning now to the drawings, as shown in FIG. 1, a transmitting part facsimile 100 is connected to a receiving part facsimile 200 by means of a communication net so that data can be exchanged between the facsimiles 100 and 200.

Referring to FIG. 2, a controller 110 generally controls the transmitting part facsimile 100 according to a system program that is fixed in a memory 150 to operate the facsimile 100. In addition, the controller 110 controls a method for transmitting fax data stored in the memory 150 to the receiving part facsimile 200 corresponding to a fax data outputting way transmitted from the receiving part facsimile 200.

In the memory 150, the system program for operating the transmitting part facsimile 100, and contents related to transmission and reception of protocol data and letter data are stored. According to the present invention, pre-scanned document data to be advance-transmitted is stored in the memory 150 and transmitted to the receiving part facsimile 200 by a transmission signal from the controller 110.

An operational panel (OPE) 170 includes, as shown in FIG. 5, a plurality of keys 172 and 173 for generating key data of the transmitting part facsimile 100. When generated, the key data is input into the controller 110. The OPE 170 further includes a displaying unit 171 for displaying the processed state of various operations of the controller 110 and display data such as system information. In addition, according to the present invention, the data outputting way of the receiving part facsimile 200 which is transmitted from the receiving part facsimile 200 is displayed on the

displaying unit 171.

A scanner 160 scans data of the document, converts the scanned data into digital image data, and supplies the controller 110 with the converted digital image data. A modem 120 modulates and outputs output data of the controller 110 into analog form and demodulates and outputs analog input signals by control of the controller 110.

A network control unit (NCU) 130 is operated to form a communication loop of a public switching telephone network (PSTN) formed of a ring and a tip and interface signals of the modem 120 and the PSTN by control of the controller 110. A printer 140 outputs print data stored in the memory 150 by a print signal from the controller 110.

Referring to FIG. 3, Phase A is a sequence of fixing a call and establishing a communication line. In the case of a manual operation, the transmitter dials the telephone number of the receiving part under the off-hook state, senses the bell sound of 16 Hz from the receiving part subscriber, checks whether the receiving part is hooked off, and connects the facsimile to the communication line when it is checked that the receiving part is hooked off. In the case of an automatic operation, when the facsimile is connected to the communication line and the receiving part facsimile is in a fax mode, a 1100 Hz tone is transmitted from the transmitting part to the receiving part for 0.5 second at an interval of 3 seconds until the receiving part responds. At this time, the receiving part transmits a 2100 Hz tone for 2.6 to 4 seconds. The receiving part transmits the called equipment discrimination signal (CED).

Phase B is a sequence of checking the states of a terminal and a transmission line and

1 controlling the terminal. In Phase B, the transmitting and receiving standby states of the terminal,
2 display and determination of a terminal constant and synchronizing state are checked and a fax
3 message is prepared to be transmitted.

4 Phase C is divided into Phase C1 for control during message transmission and Phase C2 for
5 transmission of the fax message. In other words, Phase C is a sequence of transmitting the message,
6 checking the message transmission, and maintaining synchronism.

7 Phase D is a sequence of terminating the message and terminating reception and so on. The
8 disconnection command signal (DCN) would be sent by the transmitting part to the receiving part.
In the case of continuous transmission, Phase D is followed by Phase B or Phase C to repeat the
transmitting sequence.

9 In addition, signals used in the protocols as shown in FIG. 3 will be described hereinafter.
10 Non-standard facilities (NSF) is used to discriminate demands of a specific user that cannot be
11 covered by T recommendation. ITU-T (International Telecommunications Union) recommendation
12 sets a protocol for facsimile calls. Called subscriber identification (CSI) is used to supply a specific
13 discriminating member of a subscriber of a receiving part by an international telephone number.
14 Digital identification signal (DIS) specifies a standard CCITT (Consultative Committee International
15 Telegraph and Telephone) capability of the receiving part equipment.
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18 In addition, non-standard facilities set-up (NSS) is a digital command responding to
19 information included in an NSF signal. Transmitting subscriber identification (TSI) reports that the
20 continuous information is the discriminating member of the transmitting part, and supplies facsimile

1 procedure with additional security information. Digital command signal (DCS) is a digital setup
2 command responding to a standard capacity checked by the DIS signal.

3 Confirmation to receive (CFR) is a digital response confirming that the entire previous
4 message procedure is completed and the message transmission starts. End of procedure (EOP) is
5 a response that the message transmission is completed. In addition, message confirmation (MCF)
6 reports that the entire message is satisfactorily received and displays whether an additional message
7 exists or not.

8 Referring to FIGs. 1 to 5, the method for controlling transmission of fax data according to
the outputting way of the receiving part of the present invention will be described hereinafter.

9 First, an advance-transmitting function is selected. Then, the telephone number of the
10 receiving part facsimile 200 is input using the number and letter generating unit 172 of the OPE 170
11 as shown in FIGs. 2 and 5. In order to transmit fax data from the transmitting part facsimile 100 to
12 the receiving part facsimile 200, a document is scanned and stored in the memory 150 (S100).

13 When the document is completely scanned, the controller 110 dials the pre-inputted telephone
number of the receiving part facsimile 200 to transmit the data stored in the memory 150 (S200).

14 After the telephone number is dialed, it is determined whether a call for exchanging fax data between
15 the transmitting part facsimile 100 and the receiving part facsimile 200 is connected or not (S300).

16 The determination as to whether the call is connected can be checked through predetermined
17 protocol exchanges after a dialing signal is received from the controller 110 shown in Figure 2 to
18 the receiving part facsimile 200. If it is determined that the call for exchanging the fax data between
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the transmitting part facsimile 100 and the receiving part facsimile 200 is formed, the transmitting part requires the fax data outputting way of the receiving part facsimile 200 (S400).

The requirement of the fax data outputting way is performed in Phase B that is a sequence of generally checking the states of the facsimile and the transmission line and controlling the facsimile among the protocols used for transmission and reception of the fax data as shown in FIG.

3. As described above, in Phase B, the facsimile transmission and reception standby state and synchronization state are checked and the fax message is prepared to be transmitted. In other words, the transmitting part facsimile 100 requires the fax data outputting way applied to the receiving part facsimile 200 to be reported in Phase B.

According to a preferred embodiment of the present invention, T.30 protocol is applied to transmission and reception. In the case that the transmitting part and the receiving part respectively support a non-standard mode, the receiving part reports the fax data outputting way through a pre-fixed (predetermined) fax data outputting way mode bit.

When required to report the fax data outputting way, the receiving part facsimile 200 transmits a presently applied fax data outputting way to the transmitting part facsimile 100 (S500).

Receiving the fax data outputting way of the receiving part facsimile 200, the transmitting part facsimile 100 displays the received fax data outputting way on the displaying unit 171 of the OPE 170 as shown in FIG. 5 (S600). After the fax data outputting way is displayed, the fax data stored in the memory 150 is transmitted to the receiving part facsimile 200 according to the displayed fax data outputting way (S700).

1 The fax data outputting way of the receiving part facsimile 200 applied to the present
2 invention is one of a face down way in which document data stored in the memory 150 is output in
3 order from the first page thereof and a face up way in which document data is output in reversed
4 order from the last page thereof.

5 Step S700 will be described more in detail. After the fax data outputting way is displayed at
6 step S600, it is determined whether the fax data outputting way is the face down way or not (S710).
7 If it is determined that the fax data outputting way is the face down way, the document data stored
8 in the memory 150 is transmitted to the receiving part facsimile 200 in order from the first page of
the document data (S720). Otherwise, if it is determined that the fax data outputting way is the face
up way, the document data stored in the memory 150 is transmitted to the receiving part facsimile
200 in reversed order from the last page of the document data (S730).

As described above, the present invention divides and stores the fax data into units of pages
and transmits the fax data in order or in reversed order according to the fax data outputting way of
the receiving part when the fax data is advance-transmitted in the memory. Accordingly, the fax data
does not need to be realigned when received which results in an enhanced convenience.

16 This invention has been described above with reference to the aforementioned embodiments.
17 It is evident, however, that many alternatives, modifications and variations will be apparent to those
18 having skill in the art in light of the foregoing description. Accordingly, the present invention
19 embraces all such alternatives, modifications and variations as fall within the spirit and scope of the
20 appended claims and their equivalents.